

Crutchett (gas.)

PATENT SOLAR GAS

AND

GAS APPARATUS,

PATENTED BY

JAMES CRUTCHETT, OF WASHINGTON CITY,

FOR

LIGHTING CITIES, BLOCKS OF BUILDINGS, HOTELS, CHURCHES,
PUBLIC HALLS, RESTAURANTS, STEAMBOATS, MILLS,
FACTORIES, AND PRIVATE RESIDENCES.

For General Rights, apply to the Patentee.

For Rights in Rhode Island and Connecticut, apply to Calvert, Dawes
& Burr, Providence, R. I.

For Rights in the State of New York, apply to John Skirving, Esq.,
35 Walker Street, New York.

For Rights in Massachusetts, New Hampshire and Vermont, apply
to the Massachusetts Gas Company, Boston.

For Rights for the Western States, apply to the Solar Gas Company,
Cincinnati, Ohio.

WASHINGTON GAS LIGHT COMPANY.

THE proprietors of Crutchett's patent for making "Solar Gas," in anticipation of a charter by Congress, (which has already been reported to the House of Representatives, by the Committee for the District of Columbia.) propose to form a company for lighting with gas the city of Washington, the Capitol, the public buildings and grounds, &c. They propose to transfer to such a company the patent right for lighting the city of Washington, (including all the public buildings, streets, &c.) the valuable contracts acquired through the patentee, both public and private, as well as all others entered into by themselves, for lighting public Departments and private establishments.

The subscription books will be opened on the 20th instant, at the store of J. F. Callan, corner of E and Seventh streets.

The capital is not to exceed \$100,000. Shares \$20—\$5 to be paid on each share at the time of subscribing, and due notice of subsequent instalments will be given; but subscribers may pay one or more instalments, and their dividends will be regulated accordingly.

B. B. FRENCH,
J. F. CALLAN,
Commissioners

Washington, D. C., March 16, 1848.

"North American

at streets.

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1847.

SOLAR GAS AND GAS APPARATUS,

PATENTED BY

JAMES CRUTCHETT, OF WASHINGTON CITY,

Recently introduced into the Capitol of the United States at Washington, by joint resolution of Congress.—Its adoption by Government.—Rights purchased by various Gas Companies for lighting cities.—Been in use and approved by numerous establishments.—Is adapted to the lighting of Cities, Manufactories, Hotels, Steamers, Ships, Churches, Blocks of Buildings, Private Residences, Examinations by Committees, their Reports.—Certificates of numerous parties having the same in use, &c. &c.

The Solar Gas is now being introduced into various establishments where Coal Gas has been heretofore used, the proprietors of the latter being convinced of the great improvement, brilliancy and economy of the Solar Gas. It has been introduced in many places where the Coal Gas has been long tested. Many certificates can be seen by applying to the proprietor.

The city of Lexington, Kentucky, is having works erected to light it by the Solar Gas, and St. Louis, Mo., and Columbus, Ohio, are making arrangements for the same purpose, as well as other cities, and numerous manufactories and private establishments.

As Light is the fourth want of the human family in the order, food, clothing, heat and light; therefore, that Light which can be supplied cheapest and best, will command an immense patronage, and be a universal blessing; and is, as it should be, considered an improvement in one of the most vital necessities, as well as luxuries of mankind.

Companies have been formed in all the Western States, as well as in Massachusetts, New Hampshire, Vermont, Maine, New York, and part of Pennsylvania, Delaware and New Jersey. Also for the States of Rhode Island and Connecticut; and arrangements are now only wanting to carry out this gigantic and brilliant invention in the remaining States. Liberal arrangements will be made with such companies or individuals as may be disposed to investigate and engage in the same with energy.

Cotton Seed Oil (an article now worthless,) is suitable in an eminent degree for the production of this gas, and will afford a great income to the South when this gas shall become introduced. It will vie with the article of Cotton in value.

Patent Rights for States or Places, sold, or apparatuses supplied by
J. CRUTCHETT, Washington City.

For Rights and Apparatuses for the States of Massachusetts, New Hampshire and Vermont, apply to the

MASSACHUSETTS SOLAR GAS Co., Boston.

For Maine, Connecticut and Rhode Island, to

CALVERT, DAWES & BURR, Providence, R. I.

For New York, to

JOHN SKIRVING, Esq., 35 Walker Street, New York.

For the Western States, to

THE SOLAR GAS Co., Cincinnati, Ohio.

CRUTCHETT'S SOLAR GAS, AND GAS APPARATUS,

For illumination of Cities, Manufactories, Hotels, Steamboats, Churches, and Private Residences, with certificates and reports relating to the same. Patented by James Crutchett, Washington, D. C.

The Gas Company of St. Louis, Missouri, has recently purchased of the Proprietor, the Right for the City of St. Louis.

The Gas Company of Lexington has recently purchased the Patent Right for lighting that City with Solar Gas, and several other cities are now making arrangements therefor.

J. CRUTCHETT.

TO CAPITALISTS.

The subscriber is prepared, either to sell the rights for lighting Cities, Towns or blocks of buildings, &c. &c., or will take an interest in companies formed for that purpose, either directly or indirectly, and will furnish, make and put up, apparatus, on reasonable terms.

An apparatus of sufficient capacity to light a city, may be constructed, excepting the gas holder, for about one-fifth the amount of that of coal gas, and may be managed by any ordinary mechanic and laborer, thus saving a large item of expense, in the way of engineer's salaries, &c. City authorities, corporations, companies and others wishing to invest capital in the above gas apparatus and mode of lighting, will find it to their interest to examine into this previous to making any other arrangements.

THE GAS produced by this apparatus, is called Solar Gas, from the color and softness of the rays being nearer that of the sun than any other light yet brought into use, whereby the weakest eye is not affected or injured, even immediately after gazing on

the flame of light. The human eye is adapted to see by the light of the sun, and consequently the artificial light, whose rays and color most resemble it, are best adapted to use with least inconvenience, and such is Solar Gas that on looking at it at a distance it seems full of rays brilliant and sparkling, but on nearer approach the eye is gratified with a pure soft flame, full of beauty and luxurious to sit under.

This is also the most brilliant of any other Gas yet applied for the general purposes of illumination, and as to cleanliness purity and beauty, surpasses all others, having none of the obnoxious sulphurets and acids usually attendant on coal and other gases of that kind; qualities that should be highly appreciated, even if the price were not less than others; its cost, as stated by those who use it, is certified to be only about one-third that of Coal and Rosin Gas, &c., as usually sold, light for light; its simplicity of management, freedom from smell in manufacture and uses, are such as can never be equalled by Coal, Rosin, Tar and other kinds, and safety from fire, such as to facilitate its general introduction even in Steamboats, seven of which are at this date running with it, having their whole interior and exterior lighted thereby, and several others introducing it on board, after having tried and abandoned Rosin and other kinds.

This Gas is made from any greasy substances, or commonest oil, (oil from Cotton seed, and other vegetable plants and seeds,) united with oxygen, in such a manner, and proportions as to cause perfect combustion of the rich carburets, thereby producing the intense and brilliant light, which to be appreciated must be seen. Another and important result, is that no condensation takes place in the tubes supplying the burners, &c.; whereas it is well known, how ammoniacal products are always occurring from Coal Gas, and as to Rosin, unless made on a large scale and undergoing the most perfect condensation and other processes, will soon choke up all the tubes and spoil the best fixtures. This it is which has caused the total failure to manufacture Rosin and Coal Gas on a small scale, in every instance after a short continuance; the stoppage of the tubes and fixtures of Rosin Gas is moreover productive of all the danger, by forcing its products or material into such contact with fire or other parts of the apparatus; rendering such apparatus unsatisfactory and unmanageable by ordinary persons; and costly. Whereas in the Solar Gas Apparatus no such condensation occurs, or impediments are to be encountered. The specific gravity of Solar Gas is usually from two to three times that of Coal Gas, and this is ever a good test of the illuminating power of Hydro-carburets, and bulk for bulk gives three times the illuminating power of ordinary Coal gas, and much more than Rosin gas.

The Solar Gas was introduced by desire of Congress into the

Capitol of the United States, at Washington, from the cottage of the proprietor, on North Capitol street on Capitol Hill, and temporary tubes and burners arranged in the Senate, Lobby, and several other parts of the building. The apparatus was examined by the Committee, as also the statements of several respectable proprietors of establishments having it in use some three years; and on the Senate being lighted with a few Solar gas lights, the Senate and House of Representatives passed unanimously a joint resolution, of which the following is a copy :

“Resolved by the Senate and House of Representatives of the United States, in Congress assembled, that the Secretary of the Senate and the Clerk of the House of Representatives, be authorised and directed to contract with James Crutchett for lighting up the Capitol and the Capitol Grounds with the Solar Gas light, provided that such contract can be made upon terms deemed reasonable by the said Secretary and Clerk, and that a sum not exceeding seventeen thousand five hundred dollars be and the same is hereby appropriated out of any money in the Treasury, not otherwise appropriated, to carry the said contract into effect.”

Consequently that beautiful pile, the pride of the United States, will soon be lighted, and present the most brilliant appearance of any structure on the globe.

The following Certificates, are from gentlemen who have had the Apparatus in use for several years, and many of whom are well known in this community.

Statement of the Proprietors of Globe Mills, Covington, Kentucky.

GLOBE MILLS, COVINGTON, KY.

November 12, 1845.

We are using Mr. Crutchett's Gas Lights in our Bagging Factory. We have 60 5-feet burners. We light $3\frac{1}{2}$ hours in 24, and consume 25 lbs. of Lard. We get at this fact thus: 58 lbs. of lard made 52 inches in the gasometer— $3\frac{1}{2}$ hours light consumed 22 inches.

M. J. BLAIR & CO.

WM. M. WALKER.

Engineer receives 50 cents per week extra for making the Gas.

From the Cincinnati Atlas.

CRUTCHETT'S GAS APPARATUS.

Upon the invitation of Mr. John Lockwood, the proprietor, we examined Crutchett's Gas Apparatus, now in use in the Broadway Hotel. It supplies 42 burners with bright pure gas—and is said to produce no bad smell, either from the manufacture or burning.

But the main advantage over the coal gas is the alleged saving

of expense in large establishments. Capt. Cromwell states, that the 42 burners, at this season of the year, cost him only 62½ cents each night, or \$18,38 per month, and that it is managed by one of his porters with very little difficulty. The services of the person making the gas are not taken into the amount in the above estimate. In comparing it with the cost of coal gas, Capt. Cromwell states, that the same quantity of gas which he had burnt during the last month—costing \$19,38—would have cost, if he had used coal gas, \$57,52—giving a saving of \$38,15 per month, or about 66 per cent. This apparatus has now been well tested. It has been used for lighting the Fulton Bagging Factory, in Cincinnati, for two or three years, and in Mr. G. H. Shoenberger's dwelling house about the same time. The Melodeon in Cincinnati, is also lighted with this gas. Steamboats Pike No. 7 and 8, the Magnolia, Bulletin, and Belle Creole, have this apparatus on board, and are lighted with it. We understand that the United States Hotel, at Wheeling, and several factories there and elsewhere, are also lighted with this gas. We should not think it suited for the lighting of cities or for small concerns, but affords quite a saving for factories, hotels, and where considerable quantities are used. The Gas Company have lately reduced the price of their gas fifty cents per thousand, which will materially lessen the amounts paid in the course of a year by those using large quantities.

From the Sunday News.

SOLAR GAS.

Mr. John Lockwood, of Columbia street, the proprietor of "*Crutchett's Solar Gas*," for the West, has handed a statement of the result of introducing this new kind of light into the "Broadway Hotel," of this city. The statement signed by Mr. Cromwell, gives the following result:—

The <i>Gas Bill</i> for the Broadway Hotel for the month	
of July, 1846, for 42 burners, was	\$52 00
Cost of the <i>Solar Gas</i> for August, for 46 burners,	\$19 38
	<hr/>
Balance,	\$33 62

Showing a difference in favor of the latter of about 60 per cent.

The gas was manufactured from grease bought for the purpose, and the whole apparatus is simple, and easily kept in order. The expense of putting up the entire fixtures of the Broadway Hotel was about \$500. For churches, public halls, &c., in towns and cities where cheap lights are required, this discovery is invaluable.

CERTIFICATES.

Cincinnati, Nov. 11th, 1845.

This is to certify, that the steamboats Pike, No. 7 and No. 8 of the Louisville Mail Line, have been lighted by Solar Gas, under the patent of Mr. Crutchett, the No. 7 since April last, and the No. 8 since July 20th. The former is lighted with 34 burners, the latter with 24. The expense of light for No. 7 is from 80 to 90 cents per night—expense of No. 8 under 60 cents, when the grease is purchased; but we intend using the grease from the cook-house, which we find answers equally well, in which case the expense will not exceed 10 cents a night. The said Gas Works work well, are quite simple, and give a more brilliant light than any other we have seen; and we confidently recommend its adoption to the proprietors of all Steamboats, Hotels, Manufactories, Cities, Churches, and Residences, as being the cheapest, most brilliant and clearest light we are acquainted with. We are also acquainted with others who have adopted it, who are equally satisfied with its results.

STRADER & GORMAN.

Proprietors Cincinnati and Louisville U. S. Daily Line.

THOS. FITGERALD.

Clerk Steamboat Pike, No. 8.

I hereby certify, that I superintended the Bagging and Hemp Manufactory of Cincinnati, Ohio; that in December last, a Gas Apparatus was put in operation on the premises by J. Crutchett, of this city, for lighting up the factory with gas; that the same has, since that period, been satisfactorily lighted thereby; that the quality of the gas, and its light, as far as I can judge, excel any I have seen in Europe or the United States; that the space occupied by the generating apparatus is one corner of the engine-room, about three feet six by four; and for safety, use, and economy, it surpasses any thing of the kind with which I have ever been acquainted; and it is the opinion of myself and all scientific gentlemen who have seen it, that it is entitled to all the recommendation in our power, it being not only applicable to such establishments, but churches, private houses, and vessels of any kind, being free from the great annoyance usually caused in making coal and other gases.

Witness my hand, this 4th of April, 1845.

G. F. TUCKER.

Cincinnati, Nov. 10th, 1845.

MR. J. CRUTCHETT.

Sir,—In reply to your note of to-day, I would state, the Gas Works put up by you for the Fulton Manufacturing Company, give full satisfaction. We burn seventy-six burners on an average of three hours in twenty-four, for which we use twenty-nine pounds of lard grease.

Yours respectfully,

G. F. TUCKER.

Agent for the Fulton Manufacturing Co.

Certificate of the Proprietors of the U. S. Hotel, Wheeling, Va.

This is to certify, that the undersigned, proprietors of the U. S. Hotel, Wheeling, Va., have erected in their house a Solar Gas apparatus, the patent of which they purchased of J. Crutchett, Esq. They have, say thirty burners, (30) the supplying of which requires their holder to be filled about every seventh day at an average cost of about seventy-five cents (75 cents) per day, or (\$275) two hundred and seventy-five dollars per annum. At dusk every night all the burners are lighted, and continue burning till, say from ten to eleven o'clock, when they are all shut off but say eight lights, which continue burning all night. They have had the above apparatus in operation for the last nine months, and find it to answer their most sanguine expectations.

MITCHELL & CALDWELL,

U. S. Hotel, Feb. 6th, 1846.

To J. CRUTCHETT, Esq., Washington, D. C.

The shoe-black makes the above gas without assistance or remuneration other than his former and usual wages.

From G. H. Shoenberger, Esq., Cincinnati, Ohio.

Cincinnati, Nov. 15, 1845.

J. CRUTCHETT, Esq.

Dear Sir,—You request me to say how I like your Solar Gas. It is now 18 months since I put it in operation, and have tested it fully, and to my entire satisfaction. It proves to be largely economical; it costs me 87½ cents per week for my house, and you know it is not a small one. I can only say I would be very sorry to part with it.

Respectfully yours, &c.

G. H. SHOENBERGER.

Gas made by the coachman.

U. S. Hotel, Wheeling, Sept. 1846.

In May, 1845, the undersigned, proprietors of the U. S. Hotel, Wheeling, had erected in said house, J. Crutchett's Solar Gas Apparatus, since which it has been in constant use, and entirely meets their expectations, both as to durability and economy.

MITCHELL & CALDWELL.

Certificate of C. F. Spang, Esq., Pine Creek, Alleghany, Pa.

Pittsburgh, Jan. 8th, 1846.

J. CRUTCHETT, Esq.

Dear Sir,—About two months since we started our Gas Works. When you left us, you supposed Mr. Herron would assist us. When he died, we were thrown on our own resources, having no person that ever saw Gas made. It affords me much pleasure to state that we succeeded, and that your whole apparatus exceeds our expectations. The Gas is made without difficulty, by any common laborer, and burns beautifully; and I must say, were the cost of the apparatus three times as great, I would not be willing to do without it.

Very respectfully yours,

C. F. SPANG.

In an accompanying letter of same date, he states it works like a charm.

Pittsburgh, October 3d, 1846.

JOHN LOCKWOOD, Esq.

In reply to your letter of Sept. 24th, it gives me pleasure to say, that I still continue to use "Crutchett's Solar Gas," and that it gives entire satisfaction, having used it now over a year.

Respectfully yours,

C. F. SPANG.

This is to certify, that Mr. John Lockwood, of this city, has made and put up in my house, one of Crutchett's Patent Gas Apparatuses, which supplies 42 burners, at a cost of 62½ cents each night, or \$19 38 for the last month, and is managed with very little difficulty by one of my porters, after once seeing it made. The apparatus is quite simple, and works well, and produces no bad smell from the manufacturing of the gas. I would here state that I do not use the grease from the kitchen, on the contrary, I purchase it expressly for the purpose of making gas. By request I will compare the cost of the Coal Gas, which I have previously

been using, with that of my own making. My gas bill for July amounted to \$52, less the month 2 days. The two days I set off for the usual discount on such bills. Then add \$5 52 more, to make the number of burners equal, as I now have 4 more than in July, thus my gas bill, with 4 more burners, would have amounted to \$57 52. Deduct \$19 38 from that, it leaves a balance of \$38 15 per month in favor of Crutchett's Patent Solar Gas. The difference between the cost of each amounts to 66 per cent.

JOSEPH H. CROMWELL.

Broadway Hotel, Cincinnati, Ohio, Aug. 26, 1846.

Certificate of the Sexton of the Presbyterian Church.

This is to certify, that I have attended to making gas from one of Crutchett's Patent Apparatus, at the Presbyterian Church, corner of John and Clark street, ever since its erection; we use 22 burners one night in the week, and 9 burners each for two nights in the week, and find the cost is 85 cents per week, and gives a brilliant and beautiful light, and no difficulty in attending to it.

JOHN BASSETT, Sexton.

*Extract of a Letter from Mr. John Lockwood, Cincinnati, Ohio,
Cincinnati, Feb 21, 1846.*

MR. J. CRUTCHETT.

Dear Sir,—I have got my apparatus in operation in my store, and it works beautifully, besides being admired very much, &c., &c.

JOHN LOCKWOOD.

*Letter from the Hon. Col. Pendleton to the Commissioner of Patents.
Cincinnati, April 9, 1844.*

My Dear Sir,—Messrs. Shoenberger and Strader were the Committee appointed by the Vestry of Christ Church, in this city, to procure gas light upon a new plan, suggested by Mr. Crutchett. The light has been furnished under the direction of those gentlemen, and both in quantity and quality exceeds our utmost hopes. The effect of the light coming from the centre of the ceiling is very fine. I have no doubt in a short time Mr. Crutchett's plan will supercede all others, and so soon as known will be introduced into all public edifices.

I am, very respectfully, your obedient servant,

N. G. PENDLETON.

H. L. ELLSWORTH, Patent Office, Washington.

*Certificate from the Engineer of the Bagging Factory of
Cincinnati, Ohio.*

I hereby Certify, that I am an Engineer to the Bagging Factory of William Walker, Esq., of Cincinnati, Ohio: that in addition to the Engine and Boiler of said Factory, I have, since December last, attended to a small fire in connection with a gas apparatus put up by Mr. Crutchett, in December last; that the Factory has been lighted thereby regularly since that period, and that it has regulated itself in the making of gas when used—consequently, although I have had the care of the apparatus myself, still I do not know the principle in and by which the same is manufactured; that the gas gives a purer light than any I ever saw, and the attention to the whole occupies but little time, and, as far as I am able to form an opinion of the apparatus, consider it one of the most safe, useful and economical kinds.

Witness my hand this 4th day of April, 1844.

JONAS I. JONES.

From the Hon. Commissioner Ellsworth's Report to Congress.

GAS LIGHT FROM LARD, [OIL OR GREASE.]

In forming a tabular statement of the relative expenses of gases for illumination, there will be found much to reconcile from different chemists; and I think the best to be relied on, as having had most practice therein, will be Brande, Faraday, Ure, and Phillips, in England; and Graham, Bridges, &c., in the United States; most of whom are now living. And from the fact that these gases are of rather recent use, the latest statements from them will be most useful, and in which the inventor of the apparatus in question [CRUTCHETT] agrees. The above named all agree in their statements as to the density and illuminating power of coal gas, and oil gas, and cost of oil for lamps; and their statements are, that from $1\frac{1}{2}$ to 2 cubic feet of oil gas is equal to from 5 to 6 feet of coal gas; their density, also, is in similar agreement—namely, taking air at 1,000. All allow light carburetted hydrogen, or coal gas, to be from 559.5 to 600, and the density of oil gas from 189.2 to 196.2; thus does the density of the illuminating power corroborate the opinion usually assigned the two gases.

In applying these to the gas made from lard, it must be remembered that the whole article—that is, stearine and oil—is converted as much as possible into gas; and that its carbonaceous quality, in that case, is equal, if not superior, to other common oils; in which case, the relative cost will be nearly ascertained from the following facts. The gas apparatus in question [Crutchett's] will supply 76 gas burners of great illuminating power, which burn 4 hours

per day ; and the quantity of lard consumed is under 45 pounds, (which cost \$1,35, being of the worst kind, and answering equally as the best.) This is about $5\frac{1}{2}$ gallons of oil, and 1 gallon usually makes 100 cubic feet ; therefore, the whole is about 500 or 550 cubic feet of oil gas ; and this is nearly or quite equal to thrice the same amount of coal gas. But what is of importance in connection with the mode of manufacture and apparatus, is a process, (chemically, by mechanism,) by which the *density, illuminating power, and bulk* of the gas are increased, and this by means of a *self-acting and self-regulating* machine—the nature of which is only known to the inventor, and was put up only for experiment, and is kept private.

The size of the apparatus in question, which is equal to the supply of 500 burners constantly, or 3,000 four hours per day, at the lowest computation, occupies a space in the engine room of 3 feet 6 inches by 5 feet, and altogether self-acting, except a small fire necessary to be kept under it ; the expense of which, and all other extras, amounts to 15 cents per day.

Statement of the Rev. John T. Brooke, Rector of Christ Church, Cincinnati, Ohio.

The Gas burner erected in Christ Church, of this city, by Mr. J. Crutchett, I consider a very great improvement on the common method of lighting public buildings ; the light is soft and pleasant, and sufficiently clear for reading common print with ease in every part of a building which is 110 feet by 70, with a ceiling 40 feet from the floor. The location of the light at a single point in the ceiling, from which it is shed *down*, makes it not only more pleasant to the eye, but obviates the common inconvenience of lamps or burners intervening between the spectator and the speaker. I can confidently recommend Mr. Crutchett's mode of lighting as the best, in my judgment, for church edifices and other large buildings, that I have ever seen. JOHN T. BROOKE.

April 23d, 1844. Rector of Christ Church, Cincinnati.

Testimonial of Christ Church Committee.

The undersigned, appointed from the Vestry of Christ Church, to superintend the lighting of the same with Gas, contracted with Mr. James Crutchett, and now take pleasure in certifying that Mr. Crutchett has performed his contract, and succeeded to our entire satisfaction, and as we believe to that of the entire congregation.

G. H. SHOENBERGER, } Committee.
JACOB STRADER. }

From the Cincinnati Daily Chronicle, February 19, 1845.

SOLAR GAS—SOMETHING NEW.

We understand that our enterprising citizens, Messrs. Strader & Gorman, are about to introduce the new Solar gas light on board their floating palace, the Pike No. 7, with which the entire boat will be lighted. This is another evidence of the attention they are accustomed to bestow upon the comfort and convenience of the passengers on their superior line of packets. This additional convenience must add much to the inducements to travel on this most splendid boat. While running she will present to those on shore a beautiful sight, alongside of which the other river craft must necessarily "keep dark."

We have heretofore noticed this new kind of light; but some further particulars may not be uninteresting. From repeated use during a period of more than twelve months, the usual cost of six bat wing burners, burning four hours, is found to be about 11 cents. This is attested by a number of gentlemen, whose residences, factories, and churches, have been lighted with it. On the other hand, to supply the same light, it requires about seven feet of coal gas to each burner per hour. This costs at Pittsburgh from 40 to 50 cents; in Cincinnati from 50 to 60 cents, and elsewhere in proportion.

The Methodist P. Church in Alleghany City, is lighted in the interior by a large powerful burner, equal to about 250 small ones, similar to those in Christ Church, Cincinnati. The former uses Mr. Crutchett's patent, the latter the Cincinnati coal gas. The cost of lighting the Alleghany Church for a service of two and a half hours, with the large and six other burners, is, we are told, only 55 cents, and for their weekly evening lecture, two and a half hours, 7 cents, whereas, to Christ Church, lighted in the same manner, the cost is from \$15 to \$16 per month.

The light from the solar gas is much more brilliant than the best coal gas, and is of purer quality. The construction and the operation of the apparatus for its manufacture is simple. The material employed is grease of any kind, united with oxygen by a self-acting machine; and any room, residence, church, factory, or city, can be equally accommodated by it. Generally, the kitchen will furnish grease enough to supply the house with light, which must certainly be a very great economy.

A short time since we stated that St. Louis was to be lighted by the solar gas; we now find it about to be used on the river; and we doubt not that it is destined to be extensively adopted both for public and private purposes.

From the Cincinnati Gazette, March 27, 1844.

NEW LIGHT.

We visited Christ Church on Monday evening, and were surprised at the brilliancy of the light. A correspondent familiar with the subject, gives a good description of this new light in another column. But what walls! they are dirty enough to spoil the best light in the world. We hope they will be washed at least. (*Cleanliness* is deemed, we believe, a Christian virtue,) and trust further that some pains will be taken by the members of that enlightened church to have them freshly painted. Were this done this *new light* would be beautifully brilliant.

Sunday evening was the first time the new light at Christ Church was used in public. The common lamps were removed from the body of the church, yet the light was sufficient to read the smallest diamond print in the farthest corners of that large building. The light is enclosed in two strong glasses put together in segments held firmly in metallic frames; the outer glasses are ground, and about one-third of the light is absorbed thereby; but this makes it more pleasant to the eyes, the glare through clear glass being too powerful.

After service the light was increased one-third more. It is the inventor's object to temper the glasses by degrees, and therefore the increase must be gradual.

The quantity of gas consumed by this mode is only the same as 20 gas burners would take at 8 feet each per hour, and it would take at least 36 to light the church up in the ordinary manner; the principle being the greater quantity of gas properly consumed in one focus the more light in proportion to that quantity. Thus, a half foot of gas per hour is equal to one candle, $1\frac{3}{4}$ to 2 candles, 3 feet to 10 candles, and 160 feet to 1200 candles or 120 gas lights. When it is considered how dark are the walls and ceiling of the church, the wonder is how such a light is obtained, as every particle of light falling all over the church is completely absorbed. The light, the first in the United States of the kind, differs from the Bude, or Gurney light, in that there is no extra supply of oxygen. The Houses of Parliament in England, the large halls of which are lighted by the Bude light, are only about two-thirds the size of the above church, and yet it has a number of large burners, whereas the light of Christ Church can be increased to *any extent*, or can be made sufficient for the whole city.

The upper part of the burners is secured by various iron plates, so arranged as to keep the externals quite cold, and the hand can be held even in the inmost air space, thereby rendering it perfectly safe.

From the Cincinnati Atlas, December 13, 1843.

STATISTICS OF MANUFACTURE.

The factory is warmed by steam, which secures an uniform temperature throughout the rooms, greatly to the health and comfort of the operatives. It is also lighted by gas of its own manufacture, in which respect it stands alone among the various Bagging Factories of the United States. The value of these means of light and heat, as regards economy, safety from fire, and efficiency, is very great. The Gas Works, which are on a novel principle, and constructed by Mr. James Crutchett, lately settled in Cincinnati, are remarkable for simplicity and ingenuity, occupying, in one corner of the engine-room, a space not greater than four by eight feet. They are of 500 burner capacity, although 76 burners only are actually in use, and the raw material employed is lard, of which an inferior quality answers every purpose; of this, twenty-nine pounds are consumed every night. The Gas Works were put in operation in less than three weeks from their commencement.

A great saving is effected by the use of gas. Twelve hours make a day's work, but from the first of October to the first of April, after allowing for meals, the average of sufficient daylight to work by, is not over eight hours and a half; so that the gas affords an actual saving, during that period, of more than one-fourth the entire expense of carrying on the factory.

Certificate of the M. P. Church, Alleghany, Pa.

Pittsburgh, Pa., Feb. 3, 1845.

I hereby certify, that I have had the care and management of a Solar Gas Apparatus erected and patented by Mr. Crutchett in the summer of last year; that the M. P. Church of Alleghany has been regularly lighted by it since its erection; that the gas is more pure and brilliant than any I have hitherto seen; that I have made careful experiments during the above period, and find from repeated use that six bat-wing burners, burning four hours, costs 11 cents, and this when the gas has been made under every disadvantage, therefore would be rather less, as usually made.

That the body of said church is lighted by but one large powerful burner, giving the light of from 200 to 300 common burners which has been in use every Sabbath evening for four months; that the cost of lighting said burner, together with eight others outside and in passages, &c., is 55 cents, for a service of two hours and a half long. That the whole apparatus is attended with no difficulty of management, and has exceeded the hopes of all who have had any thing to do with said church and others.

JOSEPH HERRING.

Witness—C. McKee. (Gas made by the Sexton.)

*Extract from a description of the splendid Steamboat Magnolia,
of the Louisville and New Orleans Line.*

Every part of the boat is lighted with gas, (manufactured by Crutchett's Patent) in such a manner as to avoid all hazard. The cabins and guards are brilliantly lighted. The rich chandeliers in the former produce a fine effect; they are hung with ball and socket-joint, and swing with the motion of the boat. There is said to be less risk from the use of gas than oil, it not being necessary to carry lights about the boat.

From the Pittsburgh Gazette and Advertiser.

NEW SOLAR GAS LIGHT.

We were present last evening at the new Methodist Protestant Church of Alleghany city, and were much gratified by the manner in which it was lighted. The whole is entirely new to any thing we have ever seen. The gas is not produced from coal or any thing of the kind, but from greasy material united with oxygen. Its brilliancy exceeds the best coal gas, and its purity greater than any other mode of light at present brought into use, and what is of the greatest importance to the consumers, the cost amounts to only about one-third that of coal gas, as usually sold, that is, for the same quantity of light. The apparatus generating it is of small capacity and simple operation; that part requiring greatest nicety is self-acting by the pressure of gas, and requires no attention; indeed, such an one is applicable to every use, from the large town and city to the smallest manufactory, church, or private residence, in several of which we understand it is in successful operation, and some have been in operation several months, fully answering the statements of the inventor, and the anticipations of the Hon. H. L. Ellsworth, Commissioner of Patents, who in his report to Congress in the spring goes considerably into particulars, occupying some three pages on the subject. This gas, and the apparatus for making it, has been patented by the inventor in all particulars here and in Great Britain, and from the satisfaction it gives to those who have used it, and its general adaptation to every isolated as well as crowded establishment, it will certainly make quite a revolution in coal gas works, and the mode of general illumination. Our readers will remember high testimonials given of it in Cincinnati papers a few months since.

A material improvement in the carrying out of lighting with gas is the manner of placing one burner in the interior of the church near the ceiling by which the whole interior is splendidly

illuminated, allowing any person who can read, to use the smallest diamond print in the farthest corners of this building, which is of large dimensions. There are two columns on the side of the pulpit to carry out the design of the altar, but the light they afford is not requisite for the use of the minister, that coming from the ceiling being sufficient to overpower every thing, and there seems to be hardly any limit to its power of light, if the same is fully turned on. In fact the whole building is a complete flood of light, and the beams falling from a height of about 30 feet, renders it pleasantly soft and agreeable, but to be appreciated and felt, it must be seen, as no description thereof can convey to the reader a proper idea. We understand that when the head of light is on, it is equal to many hundred gas burners of large dimensions, the whole is polarized and modified by passing through several hundred glass prisms and drops, and the arrangement displays to advantage the beauty and symmetry of the interior of the beautiful edifice.

The new Methodist Protestant Church in Alleghany city has been fitted up by the patentee, J. Crutchett, Esq., of Cincinnati, O. It is in contemplation to introduce it into several factories in Alleghany. We may mention, respecting the cost, that from \$3 worth of grease abundant gas was made, sufficient for all purposes of the church from six to eight weeks. Besides the great burner in the centre, there is about twenty small ones in the basement rooms and outside. The gas, we observed, was very heavy, and ignited several feet below the burner when lighted. We advise all our readers to go and see this very novel and beautiful spectacle.

From the Boston Daily Advertiser, January 23d, 1847.

CRUTCHETT'S PATENT SOLAR GAS APPARATUS.

We have recently had an opportunity to see this apparatus in use in this city. By it an illuminating gas is produced from any common oil, or fatty substance, and it is asserted by those who have had it in operation for several years, to produce a light which is 60 per cent. cheaper than that from coal and rosin.

Gas was made from oil in England, more than 20 years ago, but was found too expensive for general use, and until this invention of Mr. Crutchett's it has never been able to compete in price with the gas made from coal or rosin, but by this apparatus, light is made of greater brilliancy than that produced by the best of coal and rosin, and, it appears that it can be afforded at one half the cost.

This result is effected by the peculiar apparatus invented by Mr. Crutchett, by which from 40 to 50 per cent. of atmospheric air,

(containing as is well known a proportion of oxygen) is added to, and mixed with the carburetted hydrogen before it reaches the burners, and this in exact and determinate proportions, so that all danger of an explosive mixture is entirely prevented: an advantage never before obtained. This is effected by a self regulating machine, so contrived that it is supposed to be impossible for it to get out of order. Its safety is known not only from the examinations which have been made by many distinguished chemists, but from the fact that it has been in constant use now for four years in several factories, hotels, and private houses in Cincinnati, Wheeling, Pittsburgh, Baltimore, and Washington, as well as in eight or ten steamboats now running on the Ohio and Mississippi rivers. In no case has any defect of any kind yet been observed.

Its manifest advantages and the great saving of expense, resulting from the increased brilliancy given to each burner, by the application of the oxygen of the air before burning; the freedom from the deleterious effects of sulphuric and other acids, inherent in all kinds of coal gas, upon silver ware and all kinds of gilding, as well as upon the health; and the beauty and softness of the light.

The compactness of the apparatus—taking up but little room, and costing a trifle compared with the expense of apparatus for making gas from coal or rosin—is another advantage; and as this gas does not corrode or injure in the slightest degree any metallic substance, lead pipes can be used for conducting it inside of buildings, instead of iron or brass, as with coal or rosin. This causes a great saving of expense.

We have seen many printed commendations of this apparatus and the gas made from it, which have appeared in the Western papers, and have been highly pleased by the appearance of the gas and the simplicity of the apparatus. Since we have been preparing this article, we have seen the following notice of its application in Washington, which we copy from the *Intelligencer*:

GAS LIGHTS ON CAPITOL HILL.

One of the most striking and brilliant improvements that we have lately noticed in this metropolis is that of Mr. Crutchett, who has not merely lighted up North Capitol street, by the introduction of nine solar gas burners between his residence and the Capitol gate, but actually illuminated Capitol Hill by these incomparably beautiful and splendid lights. We understand that these nine gas lights are all supplied from the beautiful cottage residence of Mr. Crutchett, which is entirely lighted with solar gas, including its parlors, bed-rooms, porticos, porches, and garden, rendering the whole most beautiful to the eye when viewed either externally or internally. The light emitted from these gas burners is so strong and brilliant that a person may read small print by

them in the street without the slightest difficulty. Compared with these gas lights, the lamps around the Capitol appear quite dim—serving only to make “darkness visible.” We sincerely hope that the time is not far distant when not only the Capitol, but the public buildings and Pennsylvania Avenue may have the benefit of the solar gas light.

Pascal Iron Works, Philada., 4th Month 7th, 1847.

To J. CRUTCHETT, Washington City,

Patentee of Solar Gas Apparatus.

We have pleasure in stating that after three months trial of the Solar Gas, burning some 40 or 50 lights in our finishing rooms and machine shops, we have concluded to extend it still further, so as to light up our Foundry and other parts of our Works.

Respectfully thy friends,

MORRIS, TASKER & MORRIS.

From the New York Sun, April 19, 1847.

NIBLO'S GARDEN.

FREE EXHIBITION OF CRUTCHETT'S SOLAR GAS

This gas is now being introduced into the Capitol and public buildings at Washington, and in the city of Lexington, Kentucky. There are now upwards of sixty steamboats, churches, factories, public buildings, and dwellings, illuminated by this gas. Reference is made to the following steamboats on the Ohio and Mississippi rivers:—Magnolia, Bulletin, Belle, Creole, Pike, Herald, Mercury, Furies, Nos. 7. and 8, and fourteen others. Cincinnati—Rev. J. T. Brooks, Rector of Christ Church; this church is lit by a single burner from the ceiling; Presbyterian Tabernacle, do.; Broadway Hotel, William Tell, do.; Exchange Building; M. T. & C. Day's Granite Buildings; Fulton Manufactory, do.; Miss Longwood, residence; G. H. Shoenberger, do.; J. Strader, do.; J. Lockwood, do.; Globe Mills, Covington, Ky.; N. Staten Hotel, Wheeling, Va.; Methodist Church, Alleghany, Pa.; H. Tiffany, Baltimore, Md.; Coleman's Hotel, Washington City; Morris, Tasker & Morris' Factory, Philadelphia.

Several of the above parties have had their buildings lit up with coal and rosin gas, and have abandoned those sources, the Solar Gas being found cheaper, cleaner, and more suited to health. In two instances the parties had coal at their own doors. JOHN SKIRVING, Sole Agent for the State of New York, has an apparatus in operation in Crosby street, between Prince and Houston streets, in the rear of Niblo's lot, where he will be pleased to show the same to any person from 10 A. M. to 5 P. M. He has also certificates from those who are now using the light in his possession, which will satisfy the most skeptical.

*Letter from Professor Jackson, of Boston.**Boston Feb. 24, 1847.*

MESSRS. CURTIS & RANDALL,—

Gentlemen : I have made a number of experiments with the two bags of Oil Gas you sent me for trial, and find that the mixture of atmospheric air with it, as made by your Gas Metres, does not render it explosive. I have mixed air with it in various proportions, and have tried it in Volta's pistol, by electric sparks and by flame, and am satisfied that 40, 50 or 60 per cent. of air may be safely mixed with the Olifeant Gas, which, thus prepared, is not explosive. It is evident, therefore, that there can be no danger in using it for lighting houses or factories. Its freedom from sulphydric acid gas is much in its favor, and makes it preferable to ordinary gas from coal, as regards its influence on health. The products of its combustion are identical with those from ordinary tallow candles and oil, while the freedom from smoke from the gas, renders it much superior to ordinary lamps, and the light is also more intense. The question with regard to the introduction of your gas apparatus into factories, and other large establishments where the gas from the city works cannot be obtained, is reduced to that of economy, and will depend upon the price of ordinary oils, unfit for burning in lamps, and on that of tallow, or other fatty matters, unsuitable for the manufacture of good candles. I have seen the gas lights which were used in the Atlantic steamer before she was wrecked, and was much pleased with the simplicity and beauty of the apparatus, and the brilliancy of the lights. I have also seen the gas burned at your works, and observed that the same apparatus was used there with the same results.

Respectfully your ob't. serv't.,

CHAS. T. JACKSON.

31 Somerset street, Boston.

To the Solar Gas and Foundry Co.

Gentlemen : You have asked of me an expression of opinion in relation to the comparative salubrity of an atmosphere in which oil or coal gas is burnt. The products produced by the combustion of both these gases in a PURE STATE are the same. Coal gas, as ordinarily purified, contains sulphur compounds, which, in the combustion of the gas forms acid vapors or volatile salts, and to the extent of their existence in the gas, renders the atmosphere less fit for respiration than that in which oil gas is burning.

Respectfully yours,

A. A. HAYS, M. D.,

State Assayer.

ROXBURY LABORATORY, March 25, 1847.

Extract of a letter from Henry Tiffany, Esq., of Baltimore, to Geo. Calvert, of Virginia, dated 19th of March, 1847.

In regard to the Solar Gas, it gives me pleasure to say that it is more brilliant than any coal gas I have ever seen, and withal, a white, soft light.

In my opinion it is much cheaper than any other light, where quantity is desired.

If I could get gas at double the cost of oil, I would not use the latter, both for its trouble, cleanliness and danger.

I sent to Cincinnati for the works I now have, and so far would, under no ordinary circumstances, be deprived of its COMFORT as well as its LUXURY.

Report of the Committee appointed to investigate the cost of the Coal and Solar Gas.

From the Cincinnati Atlas, March 3, 1846.

Mr. Editor, Permit me, through the columns of your paper, to lay before the public the result of an investigation of the Committee appointed by the Sons of Temperance, to ascertain the comparative cost to the city, of Coal Gas, and that of Crutchett's, or the Grease Gas. The Report is as follows, made by the Chairman of the Committee:

I ascertained the amount of gas bills for my store for four burners six months was \$41 77, and would amount to per year \$83 54, and for each burner \$20 88 per year, at an average of 3 hours per night. Taking this as a standard, were we to use, as we shall, twenty burners, it would amount to per year \$417 60. I was informed by Mr. Tucker at the Fulton Bagging Factory, that they make from one hundred and ten pounds of grease Gas sufficient to supply eighty burners two and a half hours each day for one week; then adding one-fifth for extension of time as we would use it three hours, it would then cost us per week for twenty burners \$1 86, and for one year at the same rate, \$96 72. Take this amount from the amount of Coal Gas, it leaves a nett balance in favor of the Grease Gas of \$320 88 per year for 20 burners. Multiply this by ten years, the length of our lease, and the balance amounts to the sum of \$3,208. The result would be as follows:

Coal, or City Gas, for ten years, at \$417 60,	\$4,176 00
Crutchett's or Grease Gas, ten years, 96 72,	967 20

Net balance in favor of Grease gas, ten years,	\$3,208 80
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Leaving a balance in favor of the above gas for each and every year, on twenty burners, averaging three hours daily, \$320 88. I have not included the interest on the apparatus, as the interest on

the gas bills from year to year, will overbalance this considerably. I will carry out the above calculation, for the purpose of showing to those persons using large quantities of gas, and who as a matter of course are obliged to pay a large bill at the end of each month, the economy there would be in their adopting this apparatus, and making their own gas. Suppose they are using forty burners during the same time as above, it leaves them a balance in their favor, for one year, of \$641,76. If they use sixty burners, it would leave them a balance of \$962 64; and so on, as the number of burners increase. And as all hotels, restaurats, &c., make a very large quantity of grease, for which they get comparatively nothing, by using the same for gas, it will still reduce the cost of the article from the above estimate to them. The cost for manufacturing, it will be recollected, was included in the first estimate—which, of itself, was a mere trifle.

With the above statements, which are correct, I would leave the subject at present, hoping that those persons using a great deal of light, and paying a large amount of money for the same, will examine the subject, and see if it is not for their interest to adopt this new mode of saving a great deal of money by a very small investment,

ECONOMY.

From the Cincinnati Gazette, Nov. 11, 1845.

Messrs. Editors: As inquiries are being made to ascertain the cost of gas made from coal and other materials, to ascertain which is the cheapest, I submit below some facts and calculations, going to show that the price charged for coal gas exacts of the consumer much more than he would have to pay for gas made of grease.

Bowler's gas factory, east of Deer Creek Bridge, is lighted with gas [Crutchett's solar gas] made of grease on the premises. They light 76 burners, and keep them lighted $3\frac{1}{2}$ hours in the 24, or per day. To supply these burners for six and a half days, requires 109 pounds of grease at $3\frac{1}{2}$ cents a pound, which, with the other expenses, makes the cost of light for the 76 burners less than 80 cents per night! To supply the same burners with coal gas would require upwards of 6 feet an hour, but say 6 ft, which would be 456 feet an hour, or 1,590 a night. This at \$3 50 per 1,000 feet, would swell the price charged to \$5 50 a night! a difference in favor of grease of \$4 80 a night! The coal gas is supplied by the Gas Company; the grease or solar gas is made under Crutchett's patent by the consumer. The difference is very great, and proper economical considerations should induce inquiry into the subject by those interested, if no other considerations will.

From the Boston Traveller, Jan. 5, 1846.

☞ Solar illuminating gas was invented by an English chemist, of the name of Crutchett. This gas is employed expressly for illumination. The mode of making and using it, in conjunction with various parts of the ingenious apparatus, form the subject of his patents, which were taken out in England first, and then in the United States. This solar gas is made from common oil or ordinary fatty matter, and is declared to be more than 60 per cent cheaper than, and at the same time, altogether superior in its effulgence, and in every respect, to that made from coal. It is now used in numerous churches, factories, hotels, steamboats and cities at the West and South. Rights under the patent have been sold in all the principal states; and as the apparatus can be had on moderate terms, and for lighting a city for instance, does not require a third or fourth of the room now occupied by the large and expensive works necessary for the production of coal gas—it seems destined to be introduced into all the small business towns, as well as the most populous places.

Since writing the above, it is stated that the exclusive right to the Solar gas apparatus has been purchased for Massachusetts and several other New England States, by a company of enterprising and successful gentlemen of this city; and that they have already erected their machinery at East Boston, where it may now be seen in full operation.

In addition to the foregoing, the following Certificates of a later date are offered.

Extract of a letter received in the city from Wm. M. Walker, Esq. of Cincinnati, dated July 28, 1846.

———“As to the Solar Gas I can say that I was the first to venture in the experiment here, and after using it for over three years, I am clear that it is the most economical and safe light that has yet been introduced. We pay our Engineer 75 cents per week for attending to it during the season; any ordinary man can take charge of it. Since the receipt of your letter, I have taken pains to ascertain what it costs per week for lighting our mill. We have 58 five-foot burners, lighting on the average $2\frac{1}{4}$ hours each day, and the Engineer assures me that 20 lbs. of the poorest grease (or say $2\frac{1}{2}$ gallons oil) will make gas sufficient for three hours. In factories, or other large establishments, this mode of light is most admirable.

Extract of a letter from Rev. J. T. Brooke, Rector of Christ Church, Cincinnati, July 27, 1846.

In reply to your inquiry respecting the Solar Gas light introduced into our church by Mr. Crutchett, I would state, that our Congregation are entirely satisfied with it, so much so, that they would not exchange it for the common mode of lighting, if such an exchange were offered free of expense. It has not, to the best of my knowledge, been out of order, or needed any repairs since it was put up. The peculiar advantages of this mode of lighting, are its softness, and its elevation, so as not to interfere between the speaker and the hearer, which is especially agreeable to those of the audience whose eyes are weak.

From a letter received in this city from C. F. Spang, Esq., of Pittsburgh, Oct. 21, 1846.

In regard to Crutchett's Gas Apparatus, I will cheerfully give you such information as I possess. We have had the apparatus in operation about one year. We use about 12 burners through the evening, and in winter make gas about every 10 days. One of my men makes the gas, and to fill the holder, uses about six gallons of the roughest kind of grease. The coal used is a mere trifle. Mr. Heron has taken great pains to ascertain the expense of each burner per night, and I am satisfied it does not exceed two cents for three hours, which must be much less than the cost of burning oil or candles. I have found no condensation in the pipes whatever, and as we take the gas in a *lead pipe*, 200 yards to the dwelling-house, and the pipe is laid only six inches under ground, if there was any condensation, it would freeze and soon make itself manifest. As regards expense, safety, and beauty of light, I can express perfect satisfaction, and should be very unwilling to be without the apparatus.

Yours,

C. F. SPANG.

Extract of a letter from E. F. Tucker, Sup't. Fulton Bagging Factory Company, Nov. 19, 1846.

Dear Sir,—We have had Mr. Crutchett's Apparatus in constant use in our factory since December, 1843, and find it very durable, simple in its arrangements, and meets our most sanguine expectations.

Certificate from Samuel S. Coleman, of National Hotel, Washington, D. C., August 26, 1846.

This is to certify, that I have one of Crutchett's Solar Gas Apparatus in operation for illuminating my house. I have some 80 burners of great illuminating power, which consumes 25 pounds of common grease per night, which, at 4 cents per pound, with fuel and attention, I find costs \$1 25 per night. I burn my lights very freely, and a number of them all night, and I can confidently recommend the gas as superior in brilliancy and freedom from obnoxious smell, to any other kind, whilst its cost is as above stated.

(Signed,)

SAMUEL S. COLEMAN.

Extract of a letter from Messrs. Mitchell & Caldwell of the United States Hotel, in Wheeling, Va.

Wheeling, Oct. 1, 1846.

Dear Sir,—In answer to yours of the 23d ultimo, I can state that we had Crutchett's Gas Apparatus erected in our Hotel about eighteen months since, and find it to answer our most sanguine expectations. We have some thirty burners, about half of which burn till 11 o'clock, and several of them all night, at an expense of about \$240 per annum for the grease of which the gas is made, (which is about 66 cents per night.) The other expenses, fuel, &c., are trifling. Our apparatus cost us about \$1100, including every thing.

Yours respectfully,

MITCHELL & CALDWELL,

THE MASSACHUSETTS'

SOLAR GAS AND FOUNDRY COMPANY,

Are now ready to put up the above Apparatus in Massachusetts, New Hampshire, and Vermont, of any size, suitable for Cities, Villages, Factories, Hotels, Machine Shops, Steamboats, Private Mansions, or other buildings, and the public are invited to visit and examine an Apparatus now in operation at the Foundry, East Boston.

REFER TO

WILLIAM TELL RESTAURAT, on Fifth Street, between Main and Walnut, Cincinnati, O.

M. T. & T. C. DAY'S GRANITE BUILDINGS, on Walnut Street, Cincinnati, O.

SHULTZ & CO., BAGGING FACTORY, Maysville, Ky.

STEAMBOAT MAGNOLIA, New Orleans.

STEAMBOAT BULLETIN, St. Louis.

STEAMBOAT BELLE CREOLE, New Orleans.

STRADER & GORMAN, Cincinnati, O.

PRESBYTERIAN TABERNACLE CHURCH, Cincinnati, O.

GLOBE MILLS, Covington Ky.

BROADWAY HOTEL, Cincinnati, O.

C. F. SPANG, Pittsburgh, Pa.

STEAMBOATS PIKE, No. 7 and 8, Cincinnati, O.

UNITED STATES HOTEL, Wheeling, Va.

JOSEPH HERRING, Pittsburgh.

GEORGE H. SHOENBERGER, Cincinnati, O.

CHRIST CHURCH, Cincinnati, O.

BROADWAY EXCHANGE, Cincinnati, O.

GEO. COLLIER, ESQ., St. Louis, Mo.

H. F. TIFFANY, ESQ., Baltimore, Md.

LEXINGTON SOLAR GAS COMPANY, Lexington, Ky.

MASSACHUSETTS SOLAR GAS COMPANY, Boston.

MORRIS, TASKER & MORRIS, Philadelphia, Pa.

ASHBURY DICKENS, ESQ., Secretary of the Senate of the United States.

B. B. FRENCH, ESQ., Clerk of the House of Representatives.

GEORGE CALVERT, ESQ., Va.

JOHN SKIRVING, ESQ., New York.

RUFUS DAWES, ESQ., of Washington City.

SAMUEL J. BURR, ESQ., of Philadelphia.

SAMUEL CURTIS, ESQ., Boston.

HON. J. E. MORSE, St. Martinsville, Louisiana.

